



# Workload management

## Systematic review

A review of measurement and intervention approaches to organisational workload management

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A joint initiative of



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### Disclaimer

Please note: This Evidence Review has been produced by the Institute for Safety Compensation and Recovery Research (ISCRR) Evidence Review Hub in response to a specific question from WorkSafe Victoria. The content of this report may not involve an exhaustive analysis of all existing evidence in the relevant field, nor does it provide definitive answers to the issues it addresses. Reviews are current at the time of publication, September 2017. Significant new research evidence may become available at any time.

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## EXECUTIVE SUMMARY

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### *Background and Scope*

Work-related stress is associated with a range of negative impacts for employees, organisations and workers' compensation schemes. Workload is one of several psychosocial risk factors identified as causing workplace stress. Effective workload management approaches are critical to employee productivity, positive mental health and wellbeing and work engagement.

In 2016 the Victorian Public Sector Occupational Health and safety Leadership Group committed to lead a whole of government approach to improving mental health and wellbeing across public sector employees.

Worksafe Victoria commissioned this evidence review to support the development of a Victorian whole of government approach to mental health and wellbeing, focusing on workload management.

This evidence review was conducted to answer the following two research questions:

1. What employee workload assessment methods have been reported in the scientific literature?
2. Which interventions for employee workload management are effective in protecting or improving employee mental health and work outcomes?

### *Method*

We conducted this evidence review in two parts:

- 1) a scoping review of broad workload assessment methods, and
- 2) a systematic review of primary studies that tested workload management interventions.

### *Key findings*

Key findings of the evidence review are:

- There are three types of methods available for assessing workload: **Psychosocial risk screening tools; Job analysis; Workload allocation models.**
- **Psychosocial risk screening tools** are reliable and valid, assess multiple psychosocial risks, can inform broad workload management interventions to impact employee mental health and wellbeing across diverse work contexts and employee groups.
- There is strong evidence that **participatory workplace interventions** reduce burnout and increase job satisfaction across settings.
- There is **moderate** evidence that **job crafting** interventions reduce burnout and increase work engagement.
- The evidence is only limited that work redesign and workload management interventions improve outcomes.

### *Key implications*

Key implications of the findings are:

- Workload should be assessed and managed within a broader psychosocial risk framework
- Consider assessing psychosocial risk using a reliable and valid screening tool such as the HSE Management Standards Indicator Tool as the first stage of a broad intervention approach.

- Engage employees across levels of an organisation in psychosocial risk assessment and intervention using a participatory workplace intervention approach.
- A workplace climate that fosters bottom-up communication around workplace psychosocial risk is critical for sustained change and may require a shift in organisational culture.
- Success of any workload management intervention depends on employee consultation and engagement, executive management commitment, adequate resourcing and ongoing monitoring.

## INTRODUCTION

Work related stress is associated with poor health, absenteeism, and turnover.<sup>1</sup> The number of mental health related workers' compensation claims across Australia are increasing and these claims represent the greatest proportion of all compensation claim costs.<sup>1,2</sup> In April 2016, the Victorian Public Sector Occupational Health and Safety Leadership Group formally committed to lead and collaborate on a whole of government approach to improving the mental health and wellbeing of public sector employees.

Work-related psychosocial factors, including workload, have been identified as having a critical influence on employee stress levels, mental health and work engagement. Having an excessive workload and/or lacking the resources required to complete one's job has consistently been associated with stress, poor mental health, burnout and job disengagement.<sup>3</sup> Workload encompasses the physical, mental and emotional demands required of a worker in their usual work tasks. As shown in Figure 1 below, workload is one of several job demands that, along with job resources, contributes to psychological health and work outcomes and resources.<sup>4</sup>

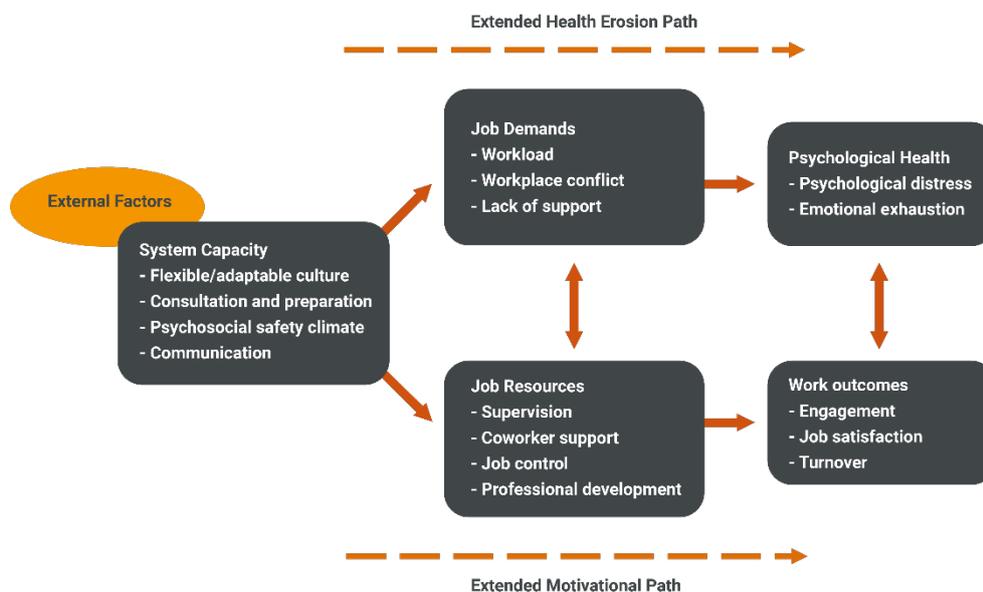


Fig 1. The modified extended Job-Demands Resources model<sup>4</sup>

Creating a work environment where job tasks and responsibilities can be successfully completed with available resources and time, has been identified as a key psychosocial factor contributing to employee mental health by the Canadian Centre for Occupational Health and Safety (CCOHS). Therefore identifying effective workload management approaches is critical to employee productivity, positive mental health and wellbeing, and engagement.

This review was commissioned by WorkSafe Victoria to support them in the development and implementation of a Victorian whole of government approach to mental health and wellbeing.

## ***Review Questions and Scope***

This evidence review was conducted to identify employee workload assessment methods reported in the literature and workload management interventions shown to be effective at protecting or improving employee mental health outcomes.

The key research questions for this review were identified in consultation with WorkSafe Victoria, and are:

1. What employee workload assessment methods have been reported in the scientific literature?
2. What are the characteristics of reported assessment methods? In particular:
  - What are their psychometric properties?
  - In what employee and/or industry groups have they been applied and validated?
3. Which interventions for employee workload management are effective in protecting or improving employee mental health outcomes?
4. What are the characteristics of effective interventions?

This report was prepared by the ISCR WorldWide Evidence Scanning Team and presents a systematic review of scientific evidence. This review is a standalone component of the larger Workload Management project (Project 207) and is complemented by an environmental scan and implementation guide.

## **METHOD**

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This review of the scientific literature was undertaken in two parts: 1) a scoping search for primary studies of workload assessment methods; and 2) a systematic search for evaluation studies of workload management interventions. The review was conducted in July 2017 according to the following criteria.

### ***Part 1. Workload assessment methods***

Primary studies were included for review if they described one or more workload assessment method used in an organizational context to assess employee workload.

We identified a large number of specific assessment tools described within the literature. A scoping approach was used to select for review a subset of representative examples of commonly used approaches to assess employee workload.

### ***Part 2. Workload management interventions***

#### ***Literature search***

Specific inclusion and exclusion criteria are described below.

#### ***Population***

Primary studies were included for review if they described interventions delivered to employees or employers. Interventions delivered to students or trainees within a teaching context were excluded.

#### ***Intervention***

Evaluations of any strategy, policy, program or activity designed to improve the management of employee workload. Interventions could be directed at the organizational, managerial or individual employee level, and could be delivered as a stand-alone activity or as part of a broader intervention program. Interventions designed to improve employees' response to workload levels or organizational stress were excluded, as were broad organizational interventions without a workload management component.

#### ***Outcomes***

Primary evaluation studies were required to report at least one employee mental health measure as a primary outcome. Mental health outcomes could include depression, anxiety, stress, or burnout. Eligible studies could report employment- or health-related measures as secondary outcomes, including: work engagement, sick leave duration, turn-over, job satisfaction, and work productivity. Studies that only included employment-related variables as primary outcomes were excluded, as were economic evaluations of workload management interventions.

#### ***Search process***

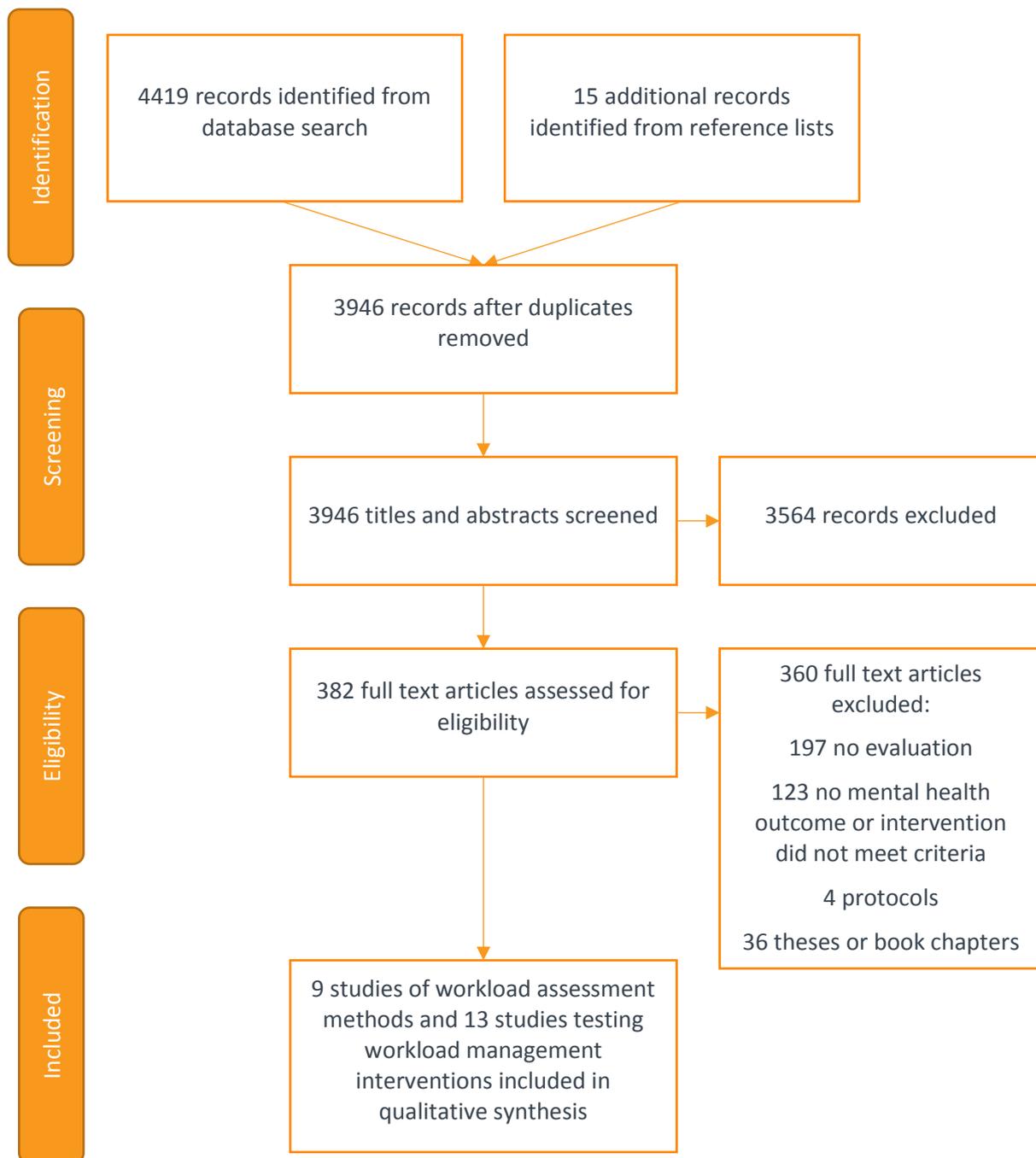
The search process is summarized in Figure 1 below and further described in Appendix 1.

#### ***Data synthesis***

Workload management interventions tested within the included studies were categorised into broad intervention types based on study authors' descriptions. The four unique intervention types identified were: 1) participatory workplace; 2) job crafting; 3) work redesign; and 4) workload management approaches.

The quality of the included studies was assessed using the Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for quantitative studies.<sup>5</sup> We determined the strength of the

evidence in support of each intervention type based on the number, quality and design of primary studies within each category.



**Fig 2.** PRISMA diagram showing search process for identifying studies of workload management interventions

## FINDINGS

### Part 1. Workload assessment methods

We identified three broad methods of assessing employee workload. As Table 1 shows workload assessment methods differ according to their scope and use. Appendix 2 provides a detailed summary of workload assessment methods.

Table 1. Characteristics of employee workload assessment methods

Method	Scope	Use(s)	Example
Psychosocial risk screening tools	Subjective self-report	Psychosocial risk screen	HSE Management Standards Indicator <sup>6</sup>
Job analysis	Objective observational or self-report	Staff allocation	Nursing Activities Score <sup>7</sup>
Workload allocation models	Objective numerical assessment	Workforce planning	Allied Health Workload Allocation <sup>8</sup>

#### Psychosocial risk screening tools

Psychosocial risk screening tools assess workload as a psychosocial work stressor. There are a large number of generic and industry-specific tools that have been developed; a previous review identified 17 psychosocial risk screening tools available in the public domain.<sup>9</sup> Appendix 2 summarizes eight commonly used tools included for review. The tools identified range in length from five (Job Stress<sup>10</sup>) to 141 (Copenhagen Psychosocial Questionnaire long version<sup>11</sup>) items and assess between one (Job stress<sup>10</sup>) and 13 (General Nordic Questionnaire full version<sup>12</sup>) psychosocial risk dimensions. Across tools, reported reliability estimates of individual dimensions range from 0.50 (Job Demand & Control measure<sup>13</sup>) to 0.92 (Perceived Work Characteristics Survey<sup>14</sup>), which indicates moderate to good reliability. Psychosocial risk screening tools are often used in the assessment phase of a broad organizational-level psychosocial risk intervention.

The HSE Management Standards Indicator Tool (MS-IT) is an example psychosocial risk screening tool used to gauge the psychosocial *health* of a workplace and can identify psychosocial risks for targeting by organizational-level stress reduction and wellbeing interventions. This tool is described briefly in the box below.

### ***HSE Management Standards Indicator tool: a psychosocial risk screening tool***

The HSE Management Standards Indicator tool (HSE MS-IT) is a 35-item questionnaire developed by the United Kingdom's Health and Safety Executive (HSE) to assess psychosocial work stressors applicable across employee groups.<sup>15, 16</sup> The tool assesses six primary work stressors that includes: demands, control, relationships, role, change, managerial support and peer support.

Employees self-report the frequency with which they have experienced each item over the past 6 months along a five point continuum that ranges from *Never* to *Always*. Example items include: *I can decide when to take a break* (control), *I am pressured to work long hours* (demands), and *I am clear what is expected of me at work* (role).

The tool has been applied across a range of workplace contexts and employee groups that includes council employees, bank clerks, veterinarians, health professionals and police officers. The MS-IT has been shown to be a reliable and valid tool that can be used to predict employee levels of job stress, satisfaction and motivation.<sup>6</sup>

The HSE MS-IT is publicly available online and is supported by a user manual, analysis tool to score and interpret findings, and promotional resources to build employee engagement. The tool and accompanying resources can be found at:

<http://www.hse.gov.uk/stress/standards/downloads.htm> (accessed 26 Oct 2017)

### ***Job analysis***

As shown in Appendix 2, we identified two commonly used job analysis tools. Job analysis approaches assess quantitative workload in physically demanding or clinical healthcare settings.<sup>7</sup> Job analysis is often used to determine the scope of a specific job role and/or staffing requirements.<sup>17</sup> This involves creating an inventory of routine job tasks, and includes a consideration of the importance, frequency, time required, difficulty and physical demand of individual job activities.

The Nursing Activities Score (NAS) is an example job analysis tool that provides a comprehensive assessment of the nature and time required to complete job tasks specific to a unique work setting. This tool is briefly described in the box below.

### ***The Nursing Activities Score: a job analysis tool***

The Nursing Activities Score (NAS) is a 23-item questionnaire that assesses seven categories of routine nursing activities critical care nurses undertake across a 24 hour period in the intensive care unit. Individual items are weighted to produce an overall percentage of time spent on nursing activities per patient and is used in staffing allocation for the management of patient care needs.<sup>7</sup> The total possible NAS score is 176.8%; a score of 100 points indicating that a critically ill patient required 100% of a nurse's attention across a 24 period. Each NAS point is equivalent to 14.4 minutes of nursing care.<sup>18</sup>

### ***Workload allocation models***

We identified two unique workload allocation models (see Appendix 2). Workload allocation models are used to provide an objective assessment of quantitative workload capacity and are undertaken

by organizational human resources departments. Mathematical models and algorithms are frequently used to determine workload needs and staffing solutions.<sup>19</sup>

This method has been used for workforce planning and staff scheduling across a range of work contexts, including academic and health workplaces, as well as call centres, healthcare and emergency services.<sup>8, 19, 20</sup>

### **Summary**

Three broad workload assessment methods were identified in the literature which differed according to their purpose, method and scope. Psychosocial risk screening tools assess workload within a broader framework of work-related psychosocial factors and can be tailored to specific work settings and employee groups, including the public sector. This method has been used as a component of workload management in organizational interventions that address employee health and wellbeing. Job analysis and workload allocation models are used to objectively and measurably assess specific job roles and staffing needs for resource planning and management.

## **Part 2. Workload management interventions**

### **Summary of key findings**

Table 2 below presents the key characteristics of workload management interventions. Interventions for managing workload shown to be effective in improving employee mental health outcomes are those that are multi-component, engage employees and target multiple psychosocial risks. Table 3 below summarises the strength of the evidence in support of the four intervention types. The evidence is strong for participatory workplace interventions, moderate for job crafting, and limited for work redesign and workload management interventions.

Overall the studies reported the following outcomes after the interventions:

- **Participatory workplace** interventions reduced the rate and level of burnout and increased the rate of job satisfied employees by 3 years post-intervention.
- **Job crafting** interventions reduced distress and burnout levels and increased work engagement across two years post-intervention.
- One **Work redesign** intervention reduced burnout and distress at intervention end.
- One **Workload management** intervention reduced burnout and distress and increased job satisfaction by two years post-intervention.

Table 2. Characteristics of employee workload management interventions

Intervention type*	Scope	Implementation responsibility	Components
Participatory workplace intervention	Psychosocial stressors	Workers; employers	Multi
Job crafting	Psychosocial stressors	Workers	Single
Work redesign	Psychosocial stressors	Employers	Single
Workload management programs	Workload	Employers	Single or multi

Note. \*There may be some unidentified overlap across intervention components of specific interventions.

Table 3. Strength of the evidence in support of intervention types based on study design and quality

Evidence domain	Participatory workplace	Job crafting	Work redesign	Workload management
Study design	3 Randomised Controlled Trials (RCTs); 2 controlled trials; 2 controlled cohorts	1 controlled cohort; 2 prospective cohorts	1 Randomised cross-over trial; 1 controlled trial	1 Prospective cohort
Quality <sup>1</sup>	3 strong; 2 moderate; 2 weak	1 strong; 1 moderate; 1 weak	1 strong; 1 moderate	1 moderate
Effect	6 Positive; 1 no effect	3 Positive	1 Positive; 1 no effect	1 Positive
Strength of the evidence	<b>Strong</b>	<b>Moderate</b>	<b>Limited</b>	<b>Limited</b>

Note. <sup>1</sup>Based on the Effective Public Health Practice Project (EPHPP) Quality Assessment rating.

## Detailed findings

### Study characteristics

We included for review 13 interventions that were evaluated in 13 studies published between 2007 and 2017 (see Appendix 3). Except for two, all studies were conducted overseas; five in countries comparable to the Australian context.

Four studies were Randomised Controlled Trials (RCTs), three were controlled trials, three studied a controlled cohort and three studied a single cohort.

Interventions were tested among health professionals (6), administration and office-based workers (3), manufacturing employees (3), teachers (1) and retail employees (1).

The effectiveness of four broad interventions were evaluated. These were: participatory workplace interventions, job crafting, work redesign, and workload management interventions.

### Evidence of the effectiveness of interventions

In this section we present a synthesis of the evidence in support of the effectiveness of the four workload management intervention types to improve employee mental health and work outcomes. Table 3 provides a summary of the published results of the effects of interventions.

Table 4. Summary of published results of intervention studies

		Intervention effects	
Type	Reference	Mental health outcomes	Work outcomes
Participatory workplace intervention	Bourbonnais	Burnout: ↓ 3y FU mean difference 5.0 intervention vs 0.2 Control, p <.05 Distress: ns	Not assessed
	DeJoy	Stress: ↓ 24m FU 2.55 intervention vs 2.71 control, p <.05 Perceived health: ↑ 24m FU 3.67 intervention v 3.57 control, p <.05	Job satisfaction: ↑ 24m FU: 3.45 intervention vs 3.32 control, p<.05 Organisational commitment: ↑ 24m FU: 3.44 intervention vs 3.29 control, p <.01
	Dollard	Job stress: ns Morale: ↑ 12m FU: mean dif 0.45 intervention vs 0.07 control, p <.01	Sick leave: ns
	Holman	Wellbeing: ↑ 10m FU: direct effect β 0.28, p <.05; indirect effect via increased job control β = 0.07 (CI 0.01-0.16), p <.05	Not assessed
	Kobayashi	Depression: ↓ 6m FU: mean diff 1.3 intervention vs 0.4 control, p <.01 females only Anxiety: ns Vigor: ↑ 6m FU: mean diff 0.4 intervention vs -0.6 control, p<.05 females only * ↓ health risks, ↑ support in departments where participation rate > 50% vs < 50%, p<.01	Sick leave: ns
	Linzer	Burnout: 12-18m FU ↓ 22% intervention vs 7% control	Job satisfaction: ↑ 12-18m FU: 23% intervention vs 10% control
	Uchiyama	Depression: ns	Not assessed
Job crafting	Sakuraya	Distress: ↓ 1m FU: mean diff 0.2 baseline to FU, p <.05	Work engagement: ↑ mean diff 0.18 baseline to 1m FU, p<.05, d = 0.33
	Tims	Burnout: ↓ baseline to 2m FU, p <.05 Crafting challenging job demands sig related to ↑ work engagement and ↓ burnout, p <.05	Work engagement: ↑ baseline to 2m FU, p<.05 Job satisfaction: ↑ baseline to 2m FU, p<.05
	Van Wingerden	Resilience: ns Self-efficacy: ↑ 12m FU 3.54 intervention vs 3.44 control, p <.05	Work engagement: ns
Work redesign	Ali	Burnout: End intervention: mean dif 3.05, p <.01 distress: mean dif 1.52 (CI 0.83-2.22), p <.001	Not assessed
	Nijp	Fatigue: ns Work stress: ns General health: ↓ 10m FU: 0.43 intervention vs , p <.001	Job satisfaction: ns Organisational commitment: ns
Workload management	Rickard	Distress: ↓ mean dif 3.61 baseline to 2y FU, p<.001 Burnout: ↓ mean diff 6.8 baseline to 2y FU, p <.05	Work engagement: ns Job satisfaction: ↑ mean dif 0.51 baseline to 2y FU, p <.01

### Participatory workplace interventions

The evidence is strong for participatory workplace interventions based on three strong, two moderate and two weak studies (see Appendix 3). Across six effective interventions, programs were tested in 6018 employees across health, manufacturing, retail, public sector and call centre workplaces. Participatory workplace interventions were associated with a 5.0 point reduction in average burnout scores at three years post-intervention,<sup>21</sup> 14% fewer employees reporting burnout and 13% more workers reporting increased job satisfaction 12-18 months post-intervention.<sup>22</sup>

Key features of effective participatory workplace interventions included the active participation of both frontline and management level employees, targeting realistic implementable changes relevant to employees' daily work, and the ongoing monitoring of implementation. For example an intervention where call centre agents and supervisors co-created action plans to improve the control which employees had over their work as well as performance feedback processes significantly improved employees' perceived job control, wellbeing, job performance and psychological contract fulfilment across 10 months post-intervention.<sup>23</sup> In contrast, when managers identified work issues requiring change and introduced changes without engaging frontline nursing staff there was no impact on employee mental health.<sup>24</sup>

The nature of changes may differentially impact employee outcomes, based on one study. Linzer reported that, compared to when no change was introduced, workflow changes - such as utilizing junior staff to complete administrative tasks, and quality improvement changes, were independently associated with a six times significantly greater odds of reduced burnout 18 months after implementation.<sup>22</sup> Furthermore, improvements to workflow or communication processes were associated with a three times significantly greater odds of improved job satisfaction across the same time period. Quality improvement and other workplace changes introduced had limited impact on employee mental health and work outcomes.

Employee engagement in participatory workplace interventions appears to buffer the negative impact of organizational instability and transition. While overall participatory workplace interventions had small but significant positive impacts on employee mental health outcomes and job satisfaction, employees in control workplaces experienced decreased mental health and work engagement across follow up periods.<sup>21, 22</sup> Significant organizational change occurred within two participating organisations during the study period. For example, during the intervention period, one organisation experienced significant transition including a new director and management turnover.<sup>21, 25, 26</sup>

Participatory interventions designed to address psychosocial risks effectively improved psychosocial factors.<sup>23-27</sup> Communication and work schedule changes were most frequently implemented in participatory interventions.

The Participatory Risk Management Work Stress intervention is an example participatory workplace intervention tested in an Australian setting similar to the Victorian public sector. This intervention is described briefly below.

### ***Participatory Risk Management Work Stress intervention: an evidence based participatory workplace intervention<sup>27</sup>***

An organisationally-focused participatory workplace intervention was delivered to five work groups in an Australian public sector organisation. The intervention comprised risk assessment, capacity-building workshops, participatory problem-solving, action and evaluation. Key to the intervention was employee participation; employees actively engaged in identifying psychosocial risks, problem-solving potential solutions and implementing interventions.

**Key implementation facilitators:** use of pre-existing organisational process and structures; executive management support; capacity building processes.

**Outcomes:** intervention was associated with a significantly greater increase in employee morale 12 months post-intervention compared to control.

### Job crafting

There is moderate evidence for job crafting interventions based on three studies of varying quality (one strong, one moderate and one weak; see Appendix 3). Job crafting led to a small reduction in average distress levels by 0.20 points (es -0.31,  $p < .05$ ) at one month,<sup>28</sup> decreased average burnout levels at 2 months,<sup>29</sup> and improved average self-efficacy levels by 0.24 points at 12 months ( $p < .05$ )<sup>30</sup> post-intervention. Furthermore two job crafting interventions increased work engagement, and one also increased job satisfaction across two months post-intervention.

Job crafting interventions were effective where employees autonomously redesigned their work environment to achieve a better fit between job demands and resources and wellbeing.<sup>28-30</sup> For example, Tims et al. reported that employees of a chemical plant who independently made changes to their daily job demands and available resources experienced improved wellbeing.<sup>29</sup> A job demands change associated with increased wellbeing was setting challenging work tasks for oneself, while an effective job resource change involved requesting greater support from one's co-workers.

Across teaching and manufacturing workplaces and both managers and entry-level employees, job crafting work demands and resources through increasing challenging job tasks has been shown to increase work engagement and decrease the risk of burnout. Thus it appears that autonomy to alter the work environment to better align job requirements with employees' personal work needs and preferences appears key to maintaining wellbeing in the workplace.

### Work redesign

There is limited evidence for work redesign interventions based on one strong and one moderate quality study.<sup>31, 32</sup> One effective redesign intervention significantly improved wellbeing among specialist medical practitioners at the end of a work schedule change implemented over nine months.<sup>32</sup> Specifically an interrupted five day per week work schedule reduced levels of burnout by an average of three points and job stress by an average 1.5 points compared to a continuous 14 day schedule. We found no evidence of a positive effect of introducing flexibility in the location and timing of work among office-based management and entry-level employees. In contrast the *New Ways of Working* (NWW) flexible work redesign intervention was associated with a small but significant decrease in employee self-reported health at 10 months post-intervention.<sup>31</sup>

### Workload management

As shown in Appendix 3, there is limited evidence in support of workload management interventions based on one moderate quality study.<sup>4</sup> A broad workload intervention introduced across the Northern Territory public health system targeted hospital nursing staff. The intervention centered on the comprehensive assessment and auditing of nursing workloads across all public hospital settings using a job analysis tool. Responsive interventions included an increase in the recruitment of nursing staff, an expansion of the Graduate Nursing program, and increased access for nursing staff to professional development. The intervention was associated with a significant decrease in levels of distress by an average 3.6 points and burnout by an average 6.8 points two years post-intervention. Additionally the workload management intervention was associated with a small but significant increase in job satisfaction by an average 0.51 points across the same time.

## ***Key factors for consideration when implementing interventions***

Based on the evidence the key factors for consideration in the implementation of effective workload management interventions are:

### ***Employee engagement***

Participatory workplace and job crafting interventions that actively engage employees across levels of an organisation to identify and address key psychosocial risks have the the greatest impacts on mental health and work outcomes.

### ***Executive management commitment***

Across intervention approaches, organisational commitment to assessment, intervention and ongoing monitoring is critical for sustained workplace change and employee engagement. The success of a participatory workplace or job crafting intervention may require a shift in organizational culture to facilitate a bottom-up communication approach.

### ***Resources to implement change***

Adequate time is required to implement change and promote sustainability. Additional resources required may include infrastructure, training, and personnel.

### ***Ongoing monitoring***

Ongoing monitoring and evaluation of implemented changes will ensure sustainable and effective change is achieved. Ongoing monitoring may be critical for sustainability during organisational instability and transition.

## IMPLICATIONS

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This evidence review identified that employee workload assessment methods with the greatest applicability to the Victorian public sector assess workload within a broader psychosocial risk framework, are applicable to diverse workplaces and can be incorporated into workload management interventions. Workload management interventions shown to be effective are those that engage with employees and address workload within a broader psychosocial risk framework.

Overall the evidence indicates:

- **psychosocial risk screening tools** are reliable and valid, assess multiple psychosocial risks and can inform broad workload management interventions to impact employee mental health and wellbeing across diverse work contexts;
- The success of any workload management intervention depends on employee consultation and engagement, executive management commitment, adequate resourcing and ongoing monitoring;
- **Strong** evidence that **participatory workplace interventions** reduce burnout and increase job satisfaction across settings; and
- **Moderate** evidence that **job crafting interventions** reduce burnout and increase work engagement.

Implications of these findings for WorkSafe Victoria in the development of an evidence based approach to workload management in the Victorian public sector are discussed below.

### **Workload assessment methods**

Psychosocial risk screening tools conceptualise workload as job demand and assess employees' perceived stress associated with aspects of their regular workload. The psychosocial work environment has direct impact on employee mental health and wellbeing. Job analysis and workload allocation models address staffing and resource allocation needs and indirectly impacts employee mental health and wellbeing. Psychosocial risk screening methods are most clearly aligned with the Victorian Workplace Mental Wellbeing Charter's focus on psychosocial risk factors in the workplace.

The HSE Management Standards Indicator tool (MS-IT) was identified as a stand out psychosocial risk screening tool with applicability to the Victorian public sector. It has been applied across a diverse range of work contexts, including employee groups similar to those in the Victorian public sector. The tool is publicly available and contains supporting resources.

### **Key considerations**

- Consider assessing psychosocial risks in the workplace using a psychosocial risk screening tool delivered to employees in the first phase of an evidence-based approach to Workload Management.

### **Workload management interventions**

Workload management interventions have the greatest impact on mental health and work outcomes when employees are actively engaged across the intervention. The evidence is strongest for multi-phase interventions with the phases of assessment, planning, implementation and monitoring, and which actively engage employees at different organisational levels across all components of an intervention.

### *Key considerations*

- Consider participatory workplace interventions that engage employees across organizational levels in all phases to implement realistic changes specific to the psychosocial climate of individual workplaces.
- A workplace climate that fosters bottom-up communication around workplace psychosocial risk is critical to sustained change and may require a shift in organizational culture.

### **CONCLUSION**

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Although there is only limited evidence around workload assessment methods and workload management interventions, the strongest evidence available suggests that participatory workplace interventions that include psychosocial risk screening and active employee engagement can improve mental health and work outcomes for employees across work contexts.

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## APPENDICES

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### **Appendix 1. Literature search process and study classification**

#### **Search process**

One reviewer searched the Medline, PsychINFO, CINAHL, ProQuest, Google Scholar and Cochrane Library electronic databases using the following search strategy: (job AND (content OR demand OR tasks OR conditions OR workload) OR workload) AND (manage OR design OR 'job craft' OR 'self manage' OR 'job analysis'). Additionally we undertook an electronic search of the Canadian Centre for Occupational Health & Safety, National Institute for Health and Care Excellence UK, Health and Safety Executive, and the ACC grey literature sources. Finally, to ensure all relevant studies were captured, a supplementary search of the electronic databases was conducted in August 2017 using the following targeted strategy: 'psychosocial work factors' AND (intervention OR program). Searches were restricted to English language per-reviewed primary studies published since 2007.

Identified titles were retained if they described either a workload assessment method or an intervention delivered at an organizational level to manage employee workload. Following the initial screening process, full text articles were obtained and assessed for eligibility based on specific criteria developed a priori by the ISCR project team in collaboration with the WSV project sponsors.

#### **Study classification**

Initially 4419 records were identified through database searches and a further 15 records through scanning of reference lists of other papers. Following removal of duplicates, the titles and abstracts of 3946 papers were reviewed manually. After the initial title and abstract screen, 382 papers were identified as potentially relevant. Full text papers were obtained and assessed for eligibility. Three hundred and sixty full text articles were excluded as they did not meet the inclusion criteria for this review. Twenty-two papers that included nine studies of workload assessment methods and 13 studies that tested workload management interventions were retained for data extraction and synthesis. For papers describing workload assessment methods, information was extracted on sample characteristics, assessment method characteristics and psychometric results. Information on study design, sample characteristics, intervention characteristics and study results was extracted for each included intervention study. One reviewer systematically extracted information from all included papers.

## Appendix 2. Workload assessment methods

	Tool	N items	Factors (n items)	Cohort(s)	Reliability - Cronbach's alpha	Validity
Psychosocial risk screening tools	Job Content Questionnaire (JCQ) <sup>33</sup>	49	Decision latitude Psychological demands Social support Physical demands Job insecurity (sub scales)	Various internationally	0.59-0.86	Predictive validity established
	General Nordic Questionnaire <sup>12</sup>	112 (full version)	Control (9) Job demands (26) Role expectations (7) Predictability at work (12) Mastery of work (6) Social interactions (12) Leadership (8) Organisational culture (13) Organisational commitment (3) Work centrality (3) Group work (5) Work motives (6) Work-life interaction (2)		0.60 - 0.88	Established
	Job Stress <sup>10</sup>	5	Job stress		0.82	Not reported
	HSE Management Standards Indicator Tool (HSE-MS IT) <sup>6, 15</sup>	35	Demands (8) Control (6) Relationships (4) Role (5) Change (3) Managerial Support (5) Peer support (4)	UK municipal employees	Demands sub-scale 0.89 Control sub-scale 0.78	
	Job Demand and Control measure <sup>13</sup>	22	Timing control (4) Method control (6) Monitoring demand (4) Problem solving (3) Production responsibility (5)		0.50 - 0.90	
	Perceived Work Characteristics Survey <sup>14</sup>	41	Autonomy & control (6) Feedback (4) Influence over decisions (4)		0.70 - 0.92	Established

	Tool	N items	Factors (n items)	Cohort(s)	Reliability - Cronbach's alpha	Validity
			Leader support (4) Professional compromise (4) Role clarity (5) Role conflict (4) Peer support (4) Work demands (6)			
	Copenhagen Psychosocial Questionnaire <sup>11, 34</sup>	40 (short) 87 (medium) 141 (long)	Demands (5) Work organisation and job contents (5) Interpersonal relations and leadership (8) Work-individual interface (4) Values at the workplace (4) Health and wellbeing (7) Offensive behaviour (4)	Nurses	0.50-0.89 (long version)	Not reported
	Work Organisation Assessment Questionnaire <sup>35</sup>	26	Quality of relationships with management (9) Reward and recognition (7) Workload issues (4) Quality of relationships with colleagues (2) Quality of physical environment (6)	Manufacturing employees	Workload issues: 0.80	Established
Job analysis	Nursing Activities Score <sup>7</sup>	23	Single factor - routine nursing activities related to patient care in ICU	Nurses		
	Quantitative Workload Inventory <sup>36</sup>	5	Single factor	Various including teachers, police officers, firefighters, clerks	0.82	Convergent validity established
Workload allocation models	Workload allocation model <sup>8</sup>		3 components: Staff workload mapping tool Data analysis spreadsheet Guidelines for calculating workload	Allied health employees	NA	
	Academic workload allocation models <sup>20</sup>		3 types: Contact hours; actual hours; points-based model	Academic employees	NA	

### Appendix 3. Workload management intervention study characteristics

	Reference (year) Country	Study design	Cohort; N; % male	Inclusion criteria	Exclusion criteria	Key change(s)	Intensity	Follow-up	Primary outcome(s)	Quality rating <sup>1</sup>
Work redesign	Ali (2011) America	Cluster randomised cross-over trial	Doctors; 45; NR	Intensive Care unit specialist	Scheduled weekend coverage	Work schedule	5d/w x 2w (interrupted schedule) vs 7d/w x 2w (continuous schedule)	Post intervention	Burnout, distress	Strong
	Nijp (2016) the Netherlands	Non-randomised cluster CT	National financial company employees; 1443; 66	Work > 24h/wk	Work across multiple departments; changed departments during study period	Flexible work time and location	Office-based work 2d/wk combined with home-based work	10m	Fatigue; work stress; general health; organisational commitment; job satisfaction	Moderate
Participatory workplace intervention	Bourbonnais (2011) Canada	Cohort control	Healthcare employees; 1109; NR	Healthcare worker with patient contact	Sick leave > 3m; working < 2d/w	~45 changes related to: team work; staffing; work organisation; training; communication; ergonomics	8 x 3h team meeting across 4m	3y	Burnout, distress	Moderate
	DeJoy (2010) America	Non-randomised CT	Retail employees; 2207; 65	NR	NR	NR	NR	24m	Job satisfaction; organisational commitment; job satisfaction; perceived health	Moderate
	Dollard (2014) Australia	Cohort control	Public sector employees; 605; 54	NR	NR	Job design; details NR	4 x 4h capacity building workshops	12m	Job stress; sick leave; morale	Weak
	Holman (2016) United Kingdom	Cluster RCT	Call centre agents; 96; 46	NR	NR	Increased worker control over: administrative tasks, complaint email response, training, performance management, team briefings	3 phases: 1 x 2d assessment workshop; job redesign development; 4m implementation period	1m	Wellbeing	Weak

	Reference (year) Country	Study design	Cohort; N; % male	Inclusion criteria	Exclusion criteria	Key change(s)	Intensity	Follow-up	Primary outcome(s)	Quality rating <sup>1</sup>
	Kobayashi (2008) Japan	Non-randomised CT	Manufacturing enterprise employees; 1434; NR	NR	Departments on rotating shifts	Work planning, work time and organisation, support	3 phases: Workplace stress profile; planning workshop; 12m implementation period	12m	Depression; anxiety; vigor; sick leave	Strong
	Linzer (2015) America	Cluster RCT	Primary care clinicians; 166; 48	> 0.5 FTE for at least 1y	NR	Communication, workflow, quality improvement	Risk assessment; planning; implementation period	12-18m	Burnout; job satisfaction	Strong
	Uchiyama (2013) Japan	Cluster RCT	Nurses; 401; 0 (I), 2 (C)	NR	NR	Various including: increased worker support, workload changes	4 x 30m group meetings + individual meeting; 3m implementation period	Post-intervention	Depression	Strong
Job crafting	Sakuraya (2016) Japan	Prospective cohort	Manufacturing or psychiatric hospital employees; 50; 84	Ongoing 1.0 FTE	Part-time or temporary employment	Job tasks, workplace support, perceptions of work	2 x 120m group training; planning; 2w implementation period	1m	Work engagement; distress	Strong
	Tims (2013) the Netherlands	Prospective cohort	Chemical plant employees; 564; 83	Study site employees	NR	Work demands and resources	Assessment; personalised feedback	2m	Work engagement; job satisfaction; burnout	Weak
	Van Wingerden (2017) the Netherlands	Cohort control	Teachers; 75; 17	NR	Hospital units not involved in patient care; unit with < 3 nurses; workers on SL or maternity leave	Increased challenging demands and structural resources, decreased hindering demands	6 phases: assessment; 12h training; 4w implementation period	12m	Resilience; work engagement; self-efficacy	Moderate
Workload management	Rickard (2012) Australia	Prospective cohort	Nurses; 178; 16 (I), 8 (C)	Registered nurse or midwife at study site	NR	System level change including: increased nursing positions, increased access to supervision and education	Assessment; 5y implementation period Territory-wide	2y	Distress, burnout; work engagement; job satisfaction	Moderate